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EXAMINER	
CALLAWAY, JADE R	

ART UNIT	PAPER NUMBER
2872	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/553,148	ULBRICHT ET AL.	
	Examiner	Art Unit	
	JADE CALLAWAY	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 April 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *20-25,27 and 30-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *20-25 and 27* is/are allowed.

6)☒ Claim(s) *32-38* is/are rejected.

7)☒ Claim(s) *30 and 31* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

2. Applicant's arguments, see pages 6-7, filed 4/24/08, with respect to the rejection of claims 20-25 and 27 have been fully considered and are persuasive. The rejection of claims 20-25 and 27 has been withdrawn.

3. Applicant's arguments filed 4/24/08 with respect to claims 32-38 have been fully considered but they are not persuasive. Applicants argue that the prior art cited does not teach a compensation mass that compensates for imbalances during rotation so that the axis of rotation coincides with the principal axis of inertia of a combination consisting of the deflection mirror means and the fitting. The modified Ishizuka reference, as stated in Section 6 of the Office Action dated 2/4/08 teaches a compensation mass adapted to compensate for imbalances during rotation so that the axis of rotation coincides with a principal axis of inertia of a combination consisting of the deflection mirror and the fitting. Ishizuka discloses that radial displacements are prevented. Thus, the axis of rotation coincides with a principal axis of inertia. The compensation mass 12B of Ishizuka is adjustable by means of the fixing screw 11. Further, Pera discloses a deflection mirror means wherein the angle between the axis of rotation and the mirror normal can be adjusted.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by

combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, one would have been motivated to combine the references so that a laser beam at the outlet of a device could describe a squashed annular trajectory substantially comparable to a straight line segment.

In addition, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Claim Objections

4. Claims 30-31 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claims 30-31 are dependent on cancelled claims.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 32-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishizuka (5,933, 267) in view of Pera (GB 2,120,804 A) and Kalayeh et al. (6,822,742).

As previously noted: Ishizuka discloses (e.g. figures 1 and 4 A-B) a device for optically scanning a medium, said device comprising: deflection mirror means including a deflection surface (8, polygon mirror) adapted to deflect light beams incident thereon and having a normal extending rectangularly to said deflection surface, said deflection mirror means being located in a bearing-mounted (3, bearing rotor) fitting and provided with at least one compensation mass means (12 B, ring shaped positioning member) adapted to compensate for imbalances during rotation (prevents polygon mirror from being displaced in the radial direction during rotation) so that the axis of rotation coincides with a principle axis of inertia of a combination consisting of the deflection mirror means and the fitting [col. 1, lines 6-9, col. 7, lines 1-34]. However, Ishizuka does not disclose drive means coupled to the deflection mirror means for rotating the deflection mirror means about an axis of rotation, the surface normal being angularly tilted relative to the axis of rotation or means for adjusting the angular tilt between the axis of rotation and the mirror normal. Ishizuka and Pera are related as scanning devices. Pera teaches (e.g. figures 1 and 2) drive means coupled to the deflection

mirror means for rotating the deflection mirror means about an axis of rotation, the surface normal being angularly tilted relative to the axis of rotation. Further Pera teaches a device wherein the angle between the axis of rotation and the mirror normal can be adjusted [abstract, pg. 2, lines 15-47]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Ishizuka, as taught by Pera, so that the laser beam at the outlet of the device describes a squashed annular trajectory substantially comparable to a straight line segment.

Consider claim 32, the previous combination teaches deflection mirror means including a deflection surface adapted to deflect light beams to be sensed said deflection surface having a normal extending rectangularly thereto [Ishizuka, col. 1, lines 6-9], drive means coupled to the deflection mirror means for rotating the deflection mirror means about an axis of rotation, said deflection surface having a surface normal being angularly tilted relative to the axis of rotation [Pera, pg. 2, lines 15-37], said deflection mirror means (8) being located in a bearing-mounted (3) fitting and provided with at least one compensation mass means (12B) so that the axis of rotation coincides with a principal axis of inertia of a combination consisting of the deflection mirror means and the fitting [Ishizuka, col. 7, lines 1-34].

However, the previous combination does not teach a system for optically sensing gases, in particular gaseous hydrocarbons, wherein the light beams are emitted from gases to be sensed.

In the same field of endeavor, Kalayeh et al. teach a system for optically sensing gases, in particular gaseous hydrocarbons, wherein the light beams are emitted from

gases (fluids) to be sensed. Kalayeh et al. teach the benefit of using a system for optically sensing gases, in particular gaseous hydrocarbons, wherein the light beams are emitted from gases so that trace fluids of gas and pipeline leaks can be detected [col. 5, lines 39-54, col. 10, lines 47-67, col. 11, lines 1-5].

Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a system for optically sensing gases in particular gaseous hydrocarbons, wherein the light beams are emitted from gases, as taught by Kalayeh et al., in the device of the previous combination, so that trace fluids of gas and pipeline leaks can be detected.

Consider claim 33, the previous combination teaches a scanning system.

However, the previous combination does not teach a system that comprises navigation means and is provided for installation in an aircraft.

In the same field of endeavor, Kalayeh et al. teach a system that comprises navigation means and is provided for installation in an aircraft. Kalayeh et al. teach the benefit of using a system that comprises navigation means and is provided for installation in an aircraft so that trace fluids of gas and pipeline leaks can be detected from an aircraft flying over an area [col. 6, lines 47-67].

Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a system that comprises navigation means and is provided for installation in an aircraft, as taught by Kalayeh et al., in the device of the previous combination, so that trace fluids of gas and pipeline leaks can be detected from an aircraft flying over an area.

Consider claim 34, Ishizuka discloses (e.g. figures 1 and 4A) in a scanning system comprising a deflection mirror (8) for deflecting light beams, a method for optically scanning a medium while said mirror is rotated about an axis of rotation, wherein at least one compensation mass (12 B, positioning member) means adapted to compensate for imbalances during rotation (prevents polygon mirror from being displaced in the radial direction during rotation) is associated to said deflection mirror in such a way that the axis of rotation coincides with a principal axis of inertia of a combination consisting of the deflection mirror and a fitting (3) supporting said deflection mirror [col. 1, lines 6-9, col. 7, lines 1-47]. However, Ishizuka does not disclose that the deflection mirror means are coupled to a drive unit and rotatable about an axis of rotation, said mirror having a deflection surface comprising a surface normal is tilted relative to the axis of rotation of the deflection mirror wherein the angle between the axis of rotation and the mirror normal can be adjusted of that the system is guided over a medium for scanning. Ishizuka and Pera are related as scanning devices. Pera teaches (e.g. figures 1 and 2) a deflection mirror means that is coupled to a drive unit and rotatable about an axis of rotation, the mirror having a normal being tilted relative to the axis of rotation of the deflection mirror. Further Pera teaches a device wherein the angle between the axis of rotation and the mirror normal can be adjusted [abstract, pg. 2, lines 15-47]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Ishizuka, as taught by Pera, so that the laser beam at the outlet of the device describes a squashed annular trajectory substantially comparable to a straight line segment.

However the modified Ishizuka reference does not disclose that the system is guided over the medium for scanning. Ishizuka, Pera and Kalayeh et al. are related as scanning devices. Kalayeh et al. teach (e.g. figures 1 and 2) a system that is guided over the medium for scanning [col. 6, lines 47-67]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of the modified Ishizuka reference, as taught by Kalayeh et al., in order to guide a system over the medium to be scanned so that trace fluids of gas and pipeline leaks can be detected from an aircraft flying over an area.

Consider claim 35, the modified Ishizuka reference discloses (e.g. figures 1 and 2 of Kalayeh et al.) a method for the remote optical sensing of gases, in particular hydrocarbons [col. 5, lines 37-54, col. 6, lines 47-67].

Consider claim 36, the modified Ishizuka reference discloses (e.g. figures 1 and 2 of Kalayeh et al.) a method for monitoring buried pipelines using an aircraft [col. 6, lines 47-67].

7. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishizuka (5,933,267) in view of Pera (GB 2,120,804).

Consider claim 37, Ishizuka discloses (e.g. figures 1 and 4A-B) a system for optically scanning a medium comprising a deflection mirror for deflecting light beams coming from said medium, and at least one compensation mass means (12B, positioning member) adapted to compensate for imbalances during rotation (prevents polygon mirror from being displaced in the radial direction during rotation) [col.1, lines 6-9, col. 7, lines 1-34]. However, Ishizuka does not disclose the deflection mirror means

being coupled to a drive unit and rotatable about an axis of rotation, said mirror having a normal being tilted relative to the axis of rotation a scanning method wherein the angle of tilt being continuously changed during rotation of said mirror and the angle between the axis of rotation and the mirror normal can be adjusted. Pera teaches (e.g. figures 1 and 2) a deflection mirror means being coupled to a drive unit and rotatable about an axis of rotation, said mirror having a normal being tilted relative to the axis of rotation a scanning method wherein the angle of tilt being continuously changed during rotation of said mirror and the angle between the axis of rotation and the mirror normal can be adjusted [abstract, pg. 2, lines 15-47]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Ishizuka, as taught by Pera, so that the laser beam at the outlet of the device describes a squashed annular trajectory substantially comparable to a straight line segment.

8. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishizuka (5,933,267) in view of Pera (GB 2,120,804 A) as applied to claim 37 above, and further in view of Kalayeh et al. (6,822,742).

Consider claim 38, the modified Ishizuka reference does not disclose a method for remote optical sensing of gases, in particular hydrocarbons. Ishizuka, Pera and Kalayeh et al. are related as scanning devices. Kalayeh et al. disclose a method for the remote optical sensing of gases, in particular hydrocarbons [col. 5, lines 37-54, col. 6, lines 47-67 of Kalayeh et al.]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of the modified Ishizuka

reference, as taught by Kalayeh et al., in order to detect leaks from a natural gas or oil pipeline.

Allowable Subject Matter

9. Claims 20-25 and 27 are allowed.

Claims 20-25 and 27 are allowable over the prior art of record for at least the reason that even though the prior art discloses devices for optically scanning a medium, the device comprising: deflection mirror means including a deflection surface adapted to deflect light beams incident thereon and having a normal extending rectangularly to the deflection surface, drive means coupled to the deflection mirror means for rotating the deflection mirror means about an axis of rotation, the surface normal being angularly tilted relative to the axis of rotation, the deflection mirror means being located in a bearing-mounted fitting and provided with at least one compensation mass means adapted to compensate for imbalances during rotation so that the axis of rotation coincides with a principal axis of inertia of a combination consisting of the deflection mirror means and the fitting, wherein the position of the compensation mass means relative to the deflection mirror means can be adjusted, the deflection mirror means can be pivoted about a pivot axis perpendicular to the axis of rotation and means for adjusting the angular tilt between the axis of rotation and the mirror normal, the prior art fails to teach or reasonably suggest, that the compensation mass means is pivotable relative to the deflection mirror means about the pivot axis of the deflection mirror means.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JADE CALLAWAY whose telephone number is (571)272-8199. The examiner can normally be reached on Monday to Friday 7:00 am - 4:30 pm est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JRC
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Examiner, Art Unit 2872

/Arnel C. Lavarias/
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